2005 Biannual Groundwater Monitoring Report

Former Aboveground Diesel Tank Site
Samoa, California
Case No. 1NHU764

Prepared for:

Simpson Samoa Corporation
Arcata, California

SHN Consulting Engineers & Geologists, Inc.
812 W. Wabash Avenue
Eureka, CA 95501-2138
707/441-8855

September 2005
000060

Reference: 000060

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QA/QC:FBL____

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Abbreviations and Acronyms

<	Denotes a value that is "less than" the laboratory method detection limit
mV	millivolts
ppm	parts per million
ug/g	micrograms per gram
ug/L	micrograms per Liter

ASTs	Above Ground Storage Tanks
BGS	Below Ground Surface
BTEX	Benzene, Toluene, Ethylbenzene, and total Xylenes
DCO_2	Dissolved Carbon Dioxide
DIPE	Diisopropyl Ether
DO	Dissolved Oxygen
EC	Electrical Conductivity
EPA	(U.S.) Environmental Protection Agency
ETBE	Ethyl Tertiary-Butyl Ether
ETH	Ethanol
MSL	Mean Sea Level
MTBE	Methyl Tertiary-Butyl Ether
MW-#	Monitoring Well-#
NA	Not Applicable
ND	Not Detected
NM	Not Measured
NR	Not Recorded
NS	Not Sampled
ORP	Oxidation-Reduction Potential
RWQCB	California Regional Water Quality Control Board, North Coast Region
SHN	SHN Consulting Engineers & Geologists, Inc.
SSC	Simpson Samoa Corporation
TAME	Tertiary-Amyl Methyl Ether
TBA	Tertiary-Butyl Alcohol
TPHD	Total Petroleum Hydrocarbons as Diesel
TPHG	Total Petroleum Hydrocarbons as Gasoline
WP-#	Well Point (Boring)-#

1.0 Introduction

This report presents the results of groundwater monitoring and sampling activities conducted by SHN Consulting Engineers & Geologists, Inc. (SHN) during the first half of 2005, at the Simpson Samoa Corporation (SSC) facility. SSC is required to conduct biannual monitoring in accordance with California Regional Water Quality Control Board, North Coast Region (RWQCB) Monitoring and Reporting Program RI-2003-0129. The SSC site is located in the community of Samoa in Humboldt County, California (Figure 1). SHN conducted the monitoring event on March 4, 2005.

This report is presented in five sections. This section introduces the reader to the site history. Section 2.0 discusses the scope of work completed at the site during the biannual monitoring event, including groundwater well sampling. Section 3.0 presents the results of the groundwater-monitoring program. Section 4.0 presents conclusions regarding the nature of the site, as well as recommendations for future activities. Section 5.0 presents a list of references cited.

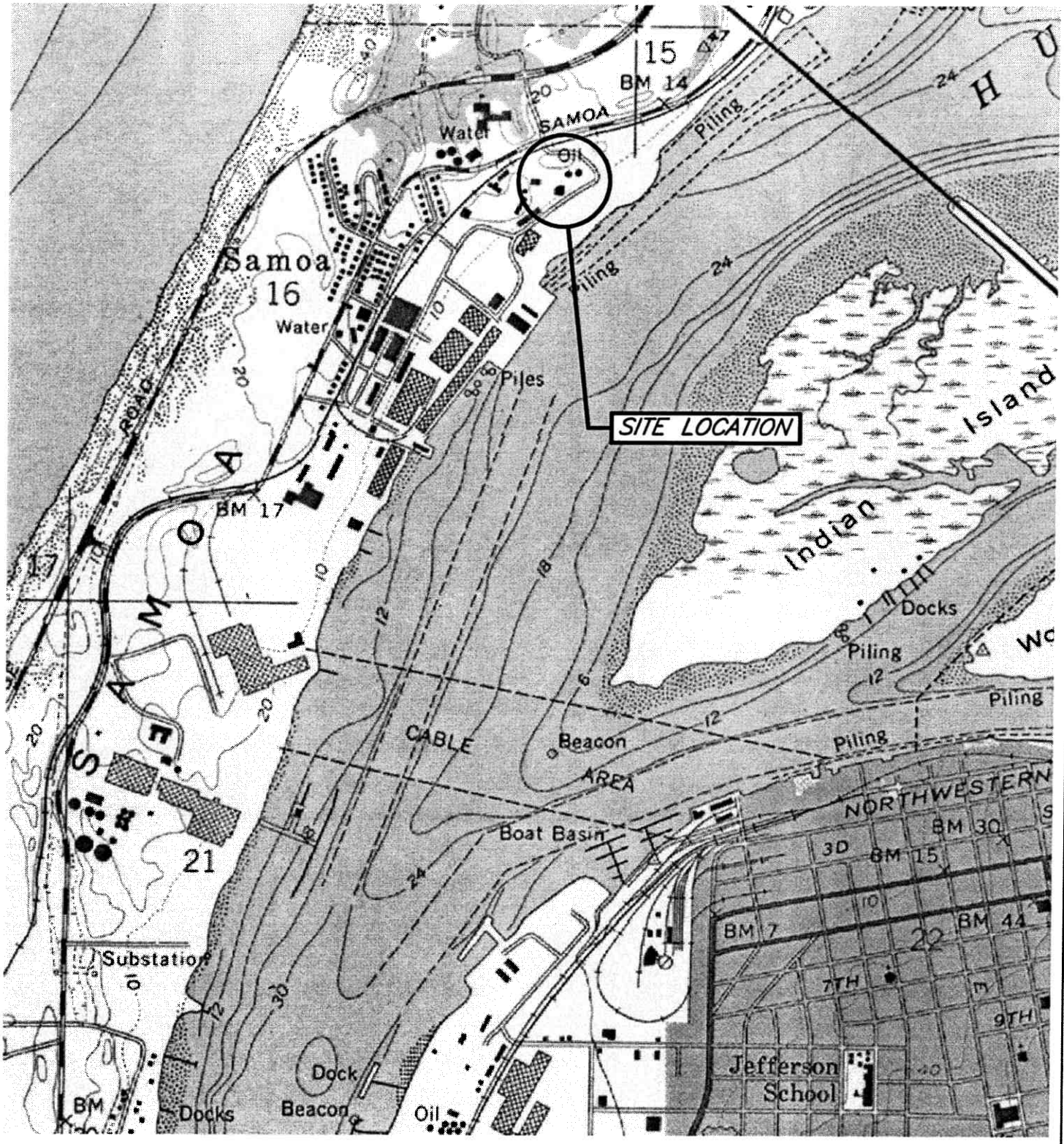
1.1 Background

The subject site is the location of two former 10,000-gallon steel diesel Aboveground Storage Tanks (ASTs) previously used to fuel equipment and vehicles. The former ASTs were located in the northern portion of the SSC facility, as shown on the site plan included as Figure 2. In the fall of 1998, the two ASTs were removed from the facility. On June 19, 2000, SHN conducted a site investigation that included the drilling and sampling of ten soil borings (borings WP-1 through WP-10), and the installation and sampling of ten well points (well points WP-1 through WP-10). The analytical results from this investigation indicated the presence of petroleum hydrocarbon-impacted soil and groundwater in the vicinity of the former ASTs (SHN, 2000). The soil and groundwater analytical results are summarized in Appendix A, Tables A-1 and A-2. Based on the results of the June 2000, site investigation, SHN recommended that groundwater-monitoring wells be installed at the site, and a quarterly groundwater-monitoring program be implemented.

On January 18 and 19, 2001, SHN supervised the installation of five groundwater-monitoring wells. Soil borings MW-1 through MW-5 were drilled and sampled in the area of the former ASTs using a truck-mounted hollow stem auger rig. Each boring was subsequently converted into a groundwater-monitoring well. Soil samples collected from each boring were analyzed for Total Petroleum Hydrocarbons as Diesel (TPHD) and as Gasoline (TPHG); Benzene, Toluene, Ethylbenzene, and total Xylenes (BTEX); and Methyl Tertiary-Butyl Ether (MTBE).

TPHD was detected in the soil samples collected from borings MW-2 and MW-5, at concentrations of 390 micrograms per gram (ug/g), and 8.4 ug/g, respectively. TPHD was not detected in any of the other soil samples that were collected. Toluene was detected in the soil samples collected from borings MW-1 and MW-5, at concentrations of 0.0056 ug/g and 0.0052 ug/g, respectively. No other BTEX components were detected in any of the soil samples that were submitted for laboratory analysis.

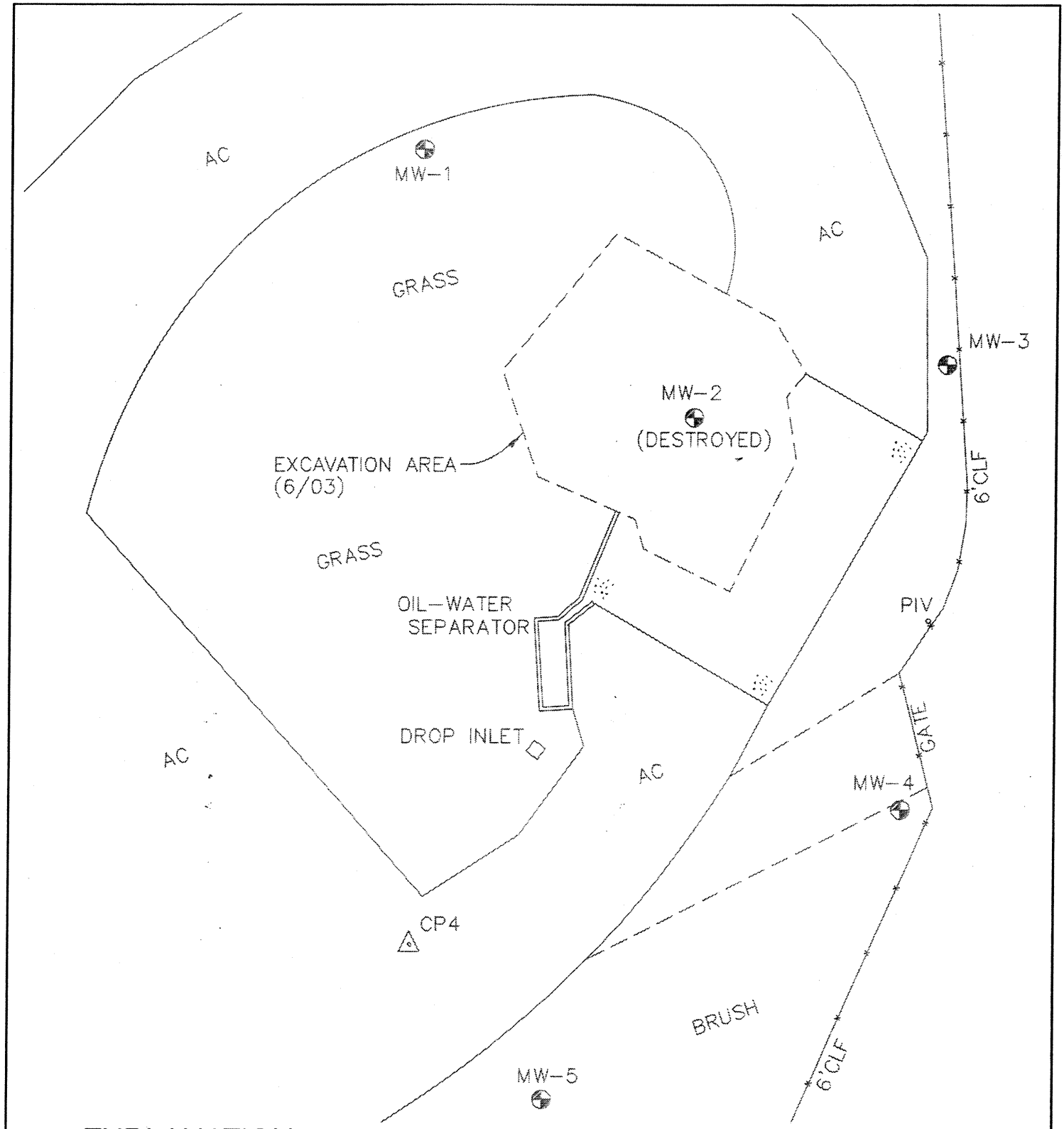
Groundwater samples were collected from monitoring wells MW-1 through MW-5 on January 25 and 26, 2001. Each groundwater sample was analyzed for TPHD, TPHG, BTEX, and MTBE. TPHD was detected in groundwater samples collected from monitoring wells MW-1 through MW-4, at concentrations ranging from 270 micrograms per Liter (ug/L) in monitoring well MW-1, to 4,700



SOURCE: EUREKA USGS 7.5 MINUTE QUADRANGLE

NO SCALE

SHN Consulting Engineers & Geologists, Inc.	Simpson Samoa Corporation Samoa Diesel AST Investigation Samoa, California		Site Location Map SHN 000060
	MARCH 2004	000060-location	Figure 1



EXPLANATION

MW-3 *EXISTING MONITORING WELL LOCATION AND DESIGNATION*

N

1"=30'

SHN Consulting Engineers & Geologists, Inc.	Simpson Samoa Corporation Samoa Diesel AST Investigation Samoa, California		Site Plan SHN 000060
	OCTOBER 2003	000060-SI1	Figure 2

ug/L in monitoring well MW-2. TPHD was not detected in the groundwater sample collected from monitoring well MW-5. TPHG was detected in the groundwater sample collected from monitoring well MW-2, at a concentration of 360 ug/L. TPHG was not detected in any of the other groundwater samples that were submitted for laboratory analysis. Based on these results, a quarterly monitoring program was implemented.

In a letter dated December 3, 2001, the RWQCB requested that the horizontal and vertical extent of soil and groundwater contamination in the area of the former ASTs be further characterized, as part of the long-range strategic plan for the site. During the second quarter of 2002, SHN supervised the installation of four exploratory soil borings (WP-101 through WP-104) at the site, using a truck-mounted Geoprobe® unit. One soil sample was collected from each soil boring and submitted for laboratory analyses. In addition, temporary well points were installed and sampled in each boring using the Geoprobe® direct push system, for the purpose of collecting groundwater samples. Well point WP-101 was intended to assess groundwater conditions to the west of the former AST location. Well point WP-102 was intended to assess groundwater conditions northwest of the former AST location. Well point WP-103 was intended to assess groundwater conditions to the east of the former AST location. However, access in the area of this well point was limited due to the presence of large pieces of concrete rubble. Although well point WP-103 was placed close to the proposed location, it was not possible to access an additional location further east of that well point. Well point WP-104 was intended to assess groundwater conditions northeast of the former AST location.

Laboratory analyses of the soil samples collected indicated the presence of TPHD in boring WP-103, at a concentration of 5.0 ug/g. The laboratory noted that the material that was reported as TPHD contained material in the diesel range of molecular weights and beyond, suggesting the presence of oil heavier than diesel. TPHD was not detected in any of the other soil samples that were collected. No detectable concentrations of either BTEX components or MTBE were present in any of the soil samples that were submitted for laboratory analyses.

TPHD was detected in each groundwater sample that was collected, at concentrations ranging from 110 ug/L in well point WP-103, to 140 ug/L in well points WP-102 and WP-104. The analytical laboratory noted that the samples contained material that did not exhibit the peak pattern typical of diesel oil. No BTEX compounds or MTBE were detected in any of the groundwater samples that were submitted for laboratory analysis. Historic soil and groundwater analytical data are included in Appendix A, Tables A-1 and A-2, respectively.

Between May 30 and June 3, 2003, an estimated 684 tons of petroleum hydrocarbon-impacted soil were excavated from the SSC facility. Prior to commencing the excavation work, the concrete secondary containment structure used to hold the former ASTs was removed. Monitoring well MW-2, located within the excavated area, was subsequently destroyed during the soil removal activities. The well construction materials, including the well casing, screen and sand pack, were completely removed. Soil samples were collected from the excavation sidewalls to assess post-excavation subsurface conditions. It was originally proposed to collect soil samples from the floor of the excavation. However, by the time the soil removal work was completed, groundwater had filled the bottom two feet of the excavation. Approximately 35,000 gallons of water were subsequently pumped from the excavation into on-site holding tanks.

Upon completion of the soil removal activities, the excavation was backfilled to grade using clean, imported fill material. Eight confirmation soil samples were collected from the sidewalls of the excavated area for laboratory analysis. In addition, a water sample was collected from the holding tank containing water pumped from the excavation. TPHD was present in 7 of the 8 soil samples, at concentrations ranging from 1,000 ug/g to 25,000 ug/g. TPHD was also present in the water sample, at a concentration of 39,000 ug/L. BTEX components were not detected in any of the soil samples or the water sample that were submitted for analyses.

On November 6, 2003, the RWQCB approved a revision to the current groundwater-monitoring program, including a reduction in the sample parameters to be tested for, and to revise the monitoring plan from quarterly to semiannual. Under the revision, only TPHD analysis is required.

Upon completion of soil excavation activities in June 2003, the RWQCB requested that a groundwater sample be collected within the excavated area near the location of former monitoring well MW-2. SHN prepared a work plan dated March 3, 2004, to use well point technology to conduct the additional groundwater monitoring as requested by the RWQCB. The work plan was approved by the RWQCB in a letter dated March 15, 2004, which also requested that an additional groundwater sample be collected below the level of the clean fill material.

On September 1, 2004, a direct-push well point (WP-201) was completed in the backfilled area of the site, adjacent to the former location of well MW-2 (Figure 2). The well point was completed in two stages. The first stage was intended to sample groundwater within the clean backfill material of the excavation, and the second stage was intended to sample groundwater beneath the clean backfill material. As part of the well point installation process, a hand auger boring was extended to a depth of 3.6 feet Below Ground Surface (BGS). The temporary well point and screen were then installed to a depth of 6 feet BGS using a protective drive casing.

Once the well point was set to the desired depth, the protective drive casing was retracted 3 feet to expose the screen from a depth of 3 feet to 6 feet BGS. A groundwater sample was then collected from the temporary well point. Upon completion of groundwater sampling at the 3-foot to 6-foot depth, the well point was driven to a depth of 9 feet BGS using the protective casing. The protective casing was then retracted 2.5 feet to expose the screen from a depth of 6.5 feet to 9 feet BGS. The well point was once again purged using a peristaltic pump, and sampled using a disposable polyethylene bailer. Laboratory analyses of the two groundwater samples revealed TPHD at a concentration of 24,000 ug/L in the shallow sample, and 420 ug/L in the deeper sample.

Groundwater monitoring at the SSC facility is ongoing, as requested by the RWQCB.

1.2 Objective

The objective of the biannual monitoring program is to assess current groundwater conditions beneath the site.

2.0 Field Activities

2.1 Monitoring Well Sampling

SHN conducted groundwater monitoring on March 4, 2005. As part of the groundwater-monitoring program, wells MW-1, MW-3, MW-4, and MW-5 were purged and sampled. Prior to purging, each monitoring well was measured for depth-to-water, and checked for the presence of floating product (none was observed). Electrical Conductivity (EC), pH, and temperature were monitored periodically during purging activities using portable instrumentation. All four wells were also measured for Dissolved Oxygen (DO), Oxidation-Reduction Potential (ORP), and Dissolved Carbon Dioxide (DCO_2).

A groundwater sample was then collected from each well using a disposable polyethylene bailer. The water samples were immediately placed in an ice-filled cooler, and submitted to the laboratory for analyses under appropriate chain-of-custody. Field data sheets from the March 4, 2005, groundwater-monitoring program are included in Appendix B.

2.2 Laboratory Analysis

Each groundwater sample was analyzed for TPHD, in general accordance with U.S. Environmental Protection Agency (EPA) Method Nos. 3510/GCFID/8015B.

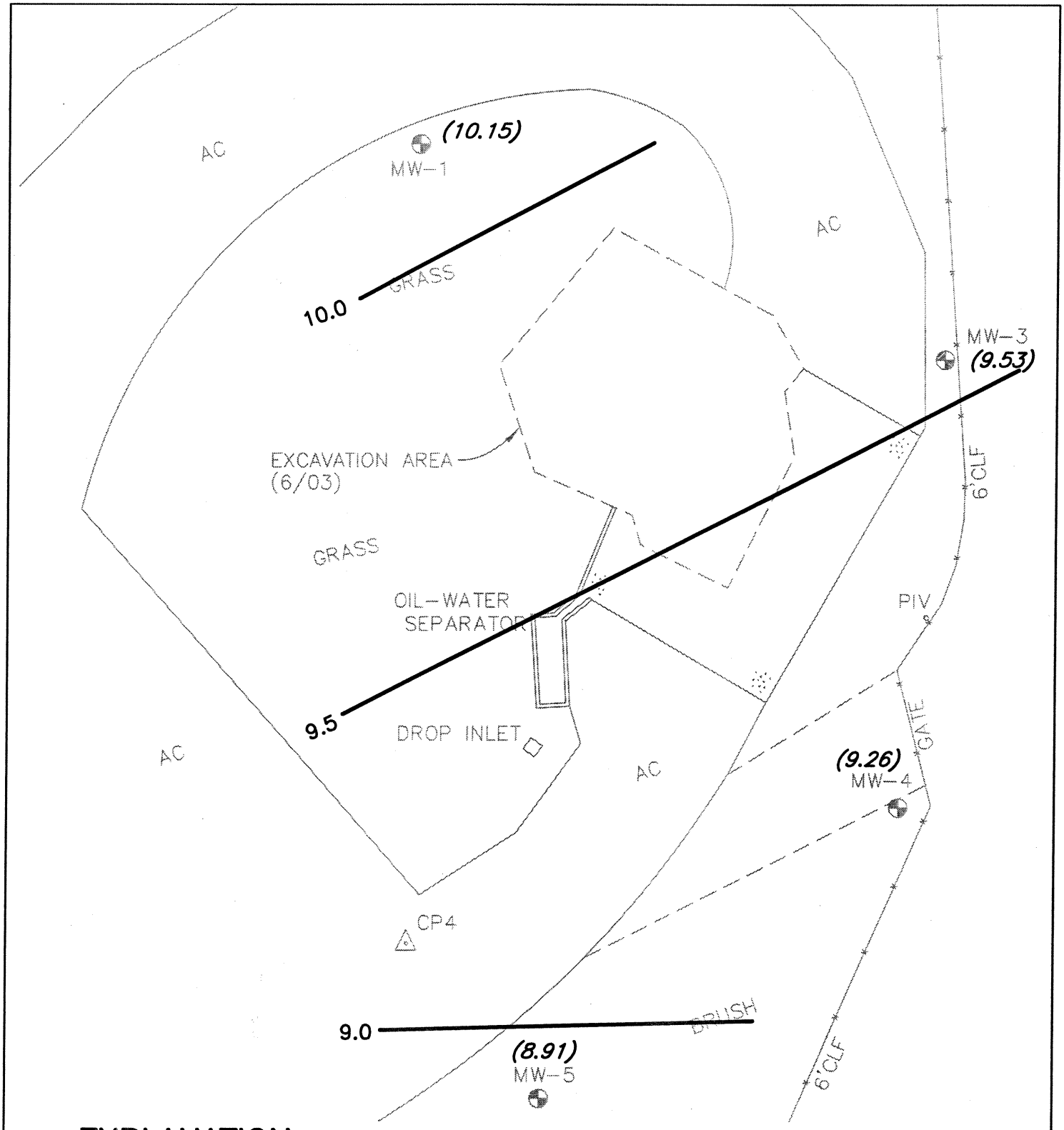
North Coast Laboratories, Ltd., a State-certified analytical laboratory located in Arcata, California, conducted the groundwater sample analyses.

2.3 Equipment Decontamination Procedures

All monitoring and sampling equipment was cleaned prior to being transported to the site. All smaller equipment was initially washed in a water solution containing Liquinox® cleaner, followed by a distilled water rinse, then by a second distilled water rinse.

2.4 Investigation-Derived Waste Management

All rinse water used for decontaminating field-sampling equipment, and all purge water, was temporarily stored on site in five-gallon buckets. The water was then transported to SHN's 1,000-gallon purge water storage tank located at 812 West Wabash Avenue in Eureka, California. Approximately 26 gallons of decontamination and purge water from the March 4, 2005, sampling event was discharged, under permit, to the City of Eureka municipal sewer system. Appendix B contains the discharge receipt for the 26 gallons of wastewater that were generated during the March 2005 groundwater-monitoring event.



EXPLANATION

MW-3 — EXISTING MONITORING WELL LOCATION AND DESIGNATION

(8.91) — GROUNDWATER ELEVATION IN FEET ABOVE MSL

9.0 — CONTOUR OF EQUAL GROUNDWATER ELEVATION

N

1"=30'

SHN Consulting Engineers & Geologists, Inc.	Simpson Samoa Corporation Samoa Diesel AST Investigation Samoa, California		Groundwater Contours March 4, 2005 SHN 000060
	August, 2005	000060-GWC-MAR-2005	Figure 3

3.0 Groundwater Monitoring Results

3.1 Hydrogeology

Table 1 presents depth-to-groundwater measurements collected from each monitoring well prior to sampling.

Table 1
Groundwater Elevations, March 4, 2005
Simpson Samoa Former AST Site, Samoa, California

Sample Location	Top of Casing Elevation (feet MSL)[1]	Depth-to-Water (feet)[2]	Groundwater Elevation (feet MSL)
MW-1	14.74	4.59	10.15
MW-3	12.54	3.01	9.53
MW-4	12.24	2.98	9.26
MW-5	11.98	3.07	8.91

1. MSL: Mean Sea Level
2. Below top of casing

During the March 4, 2005, monitoring event, the direction of groundwater flow beneath the SSC site was to the south, with an approximate gradient of 0.006. A groundwater contour map for the March 4, 2005, monitoring event is presented as Figure 3. Historical groundwater elevation data are presented in Appendix A, Table A-3.

3.2 Groundwater Analytical Results

Table 2 summarizes the laboratory analytical results for the groundwater samples collected on March 4, 2005.

Table 2
Groundwater Analytical Results, March 4, 2005
Simpson Samoa Former AST Site, Samoa, California
(in ug/L)[1]

Sample Location	TPHD[2]
MW-1	<50[3]
MW-3	**660**[4]
MW-4	**210**[4]
MW-5	<50

1. ug/L: micrograms per Liter
2. TPHD: Total Petroleum Hydrocarbons as Diesel, analyzed in general accordance with EPA Method Nos. 3510/GCFID/8015B.
3. <: Denotes a value that is "less than" the laboratory method detection limit.
4. Sample contains material similar to degraded or weathered diesel oil.

TPHD was detected in the groundwater samples collected from monitoring wells MW-3 and MW-4, at concentrations of 660 and 210 ug/L, respectively. TPHD was not present above the laboratory method detection limit in the groundwater samples collected from wells MW-1 and MW-5. The complete laboratory test results, quality assurance/quality control data, and corresponding chain-of-custody documentation are included in Appendix C. The TPHD concentrations in existing wells on March 4, 2005, are shown on Figure 4. Historic groundwater monitoring data are presented in Appendix A, Table A-2.

3.3 Natural Attenuation Parameters

DO, DCO_2, and ORP were measured in each groundwater-monitoring well prior to sampling, and are summarized in Table 3.

Table 3
DO, DCO_2, and ORP Measurement Results, March 4, 2005
Simpson Samoa Former AST Site, Samoa, California

Sample Location	DO[1] (ppm)[2]	DCO_2[3] (ppm)	ORP[4] (mV)[5]
MW-1	0.74	150	72
MW-3	0.90	100	0
MW-4	1.12	90	-30
MW-5	0.77	80	57

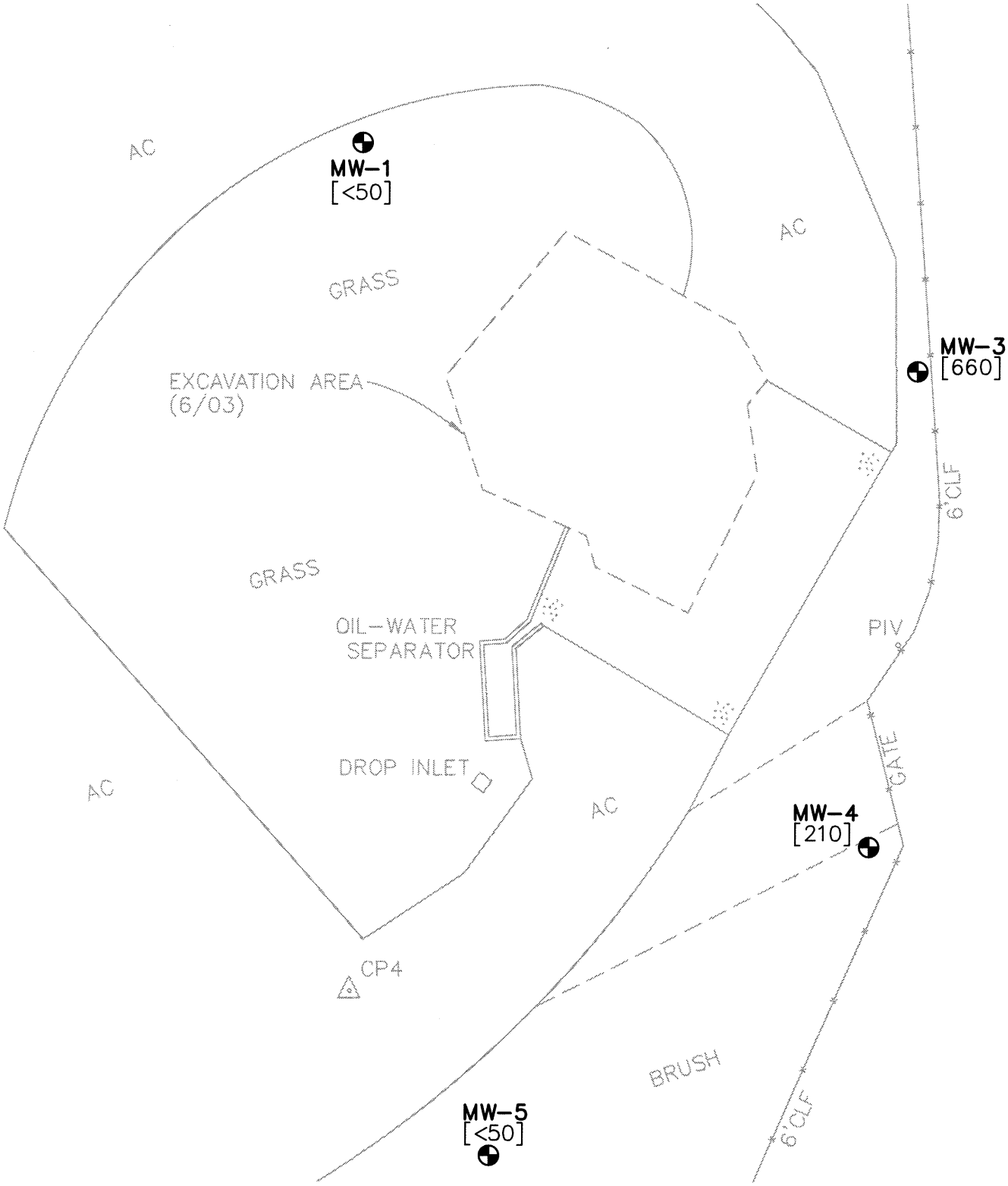
1. DO: Dissolved Oxygen, field measured using portable instrumentation.
2. ppm: Measurement concentration, in parts per million.
3. DCO_2: Dissolved Carbon Dioxide, field measured using a field test kit.
4. ORP: Oxidation-Reduction Potential measured using portable instrumentation.
5. mV: millivolts

During the March 4, 2005, monitoring event, DO concentrations ranged from 0.74 parts per million (ppm) in well MW-1, to 1.12 ppm in well MW-4. These DO concentrations are sufficient to support biodegradation. DCO_2 concentrations ranged from 80 ppm in well MW-5, to 150 ppm in well MW-1, and indicate that biodegradation may be occurring at the site. ORP measurements ranged from -30 millivolts (mV) in well MW-4, to 72 mV in well MW-1. These measurements indicate that biodegradation is occurring at the site. Historic DO, DCO_2, and ORP measurement results are included in Appendix A, Table A-4.

4.0 Discussion and Recommendations

The results of this and previous groundwater-monitoring events indicate that the TPHD present in groundwater beneath the site appears to be limited in extent, primarily in the former source area. The groundwater gradient beneath the site is very shallow. Although detectable TPHD concentrations are present in the former excavation area, it does not appear that significant migration of petroleum hydrocarbons is occurring.

Figure 5 shows the TPHD concentrations in monitoring wells MW-3 and MW-4 over time.



EXPLANATION

MW-5 — *EXISTING MONITORING WELL LOCATION AND DESIGNATION*

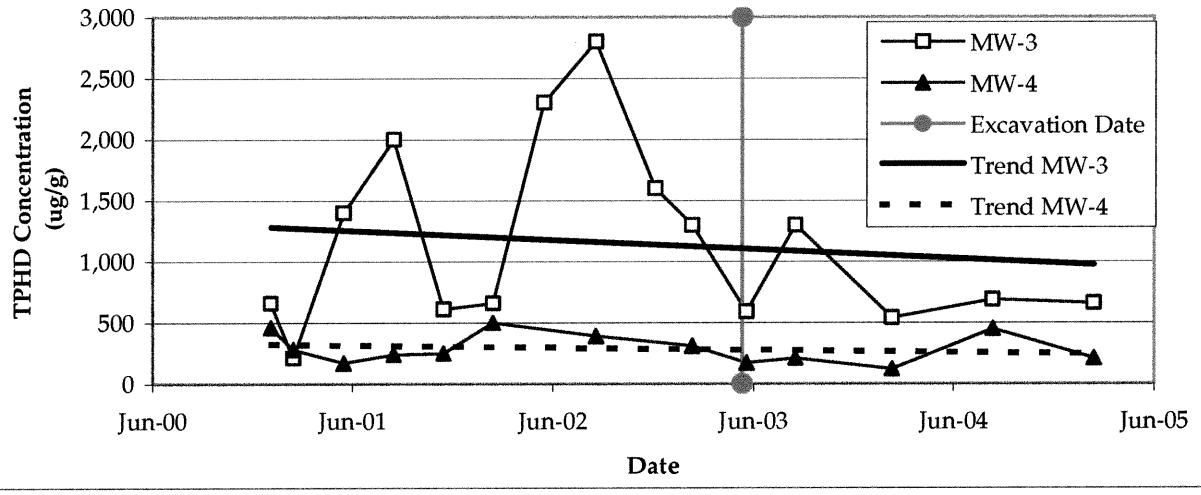
[210] — *TPHD CONCENTRATION IN GROUNDWATER, IN ug/L*

N

1"=30'

SHN Consulting Engineers & Geologists, Inc.	Simpson Samoa Corporation Samoa Diesel AST Investigation Samoa, California	TPHD Concentrations in Groundwater, March 4, 2005 SHN 000060	
	August, 2005	000060-TPHD-MAR-2005	Figure 4

Figure 5
TPHD Concentration over Time, Wells MW-3 and MW-4
Simpson Samoa Corporation Former AST Location



Both wells show decreasing concentrations of TPHD, and these trends are likely to continue. Approximately 684 tons of petroleum hydrocarbon-impacted soil and 35,000 gallons of petroleum hydrocarbon-impacted groundwater were removed from the former AST area during the excavation program conducted in June 2003. Using the petroleum hydrocarbon concentrations in the removed material, this translates into the removal of approximately 2,270 gallons of diesel fuel product.

Considering the decreasing concentration trends in wells MW-3 and MW-4 and the indication that biodegradation is occurring, SHN recommends that semiannual monitoring of wells MW-1, MW-3, MW-4, and MW-5 be continued in accordance with RWQCB Monitoring and Reporting Program RI-2003-0129. The next groundwater-monitoring event is scheduled for September 2005.

5.0 References Cited

U.S. Environmental Protection Agency. (September 1996). *How to Effectively Recover Free Product at Leaking Underground Storage Tank Sites.* NA:EPA Office of Underground Storage Tanks, OSWER National Risk Management Research Laboratory, ORD.

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Appendix A

Historic Monitoring Data

Table A-1
Historical Soil Analytical Results
Simpson Samoa Former AST Site, Samoa, California
(in ug/g)[1]

Sample Location	Date	TPHD[2]	B[3]	T[3]	E[3]	X[3]	MTBE[4]
WP-1	6/19/2000	**1.5**	<0.005[5]	<0.005	<0.005	<0.005	<0.05
WP-2	6/19/2000	**12**	<0.005	<0.005	<0.005	<0.005	<0.05
WP-3	6/19/2000	**6,100**	<0.5	<0.5	<0.5	<0.5	<5.0
WP-4	6/19/2000	**1,700**	<0.5	<0.5	<0.5	<0.5	<5.0
WP-5	6/19/2000	**78**	<0.005	<0.005	<0.005	<0.005	<0.05
WP-6	6/19/2000	**2.1**	<0.005	<0.005	<0.005	<0.005	<0.05
WP-7	6/19/2000	**37**	<0.005	**0.015**	<0.005	<0.005	<0.05
WP-8	6/19/2000	**5.4**	<0.005	<0.005	<0.005	**0.0066**	<0.05
WP-9	6/19/2000	**1.1**	<0.5	<0.5	<0.5	**1.72**	<5.0
WP-10	6/19/2000	**5**	**0.013**	**0.0052**	<0.005	<0.005	<0.05
MW-1 4-6	1/18/2001	<1.0	<0.005	**0.0056**	<0.005	<0.005	<0.050
MW-2 5.0	1/19/2001	**390**	<0.005	<0.005	<0.08	<0.02	<0.050
MW-3 4-6	1/18/2001	<1.0	<0.005	<0.005	<0.005	<0.005	<0.050
MW-4 4-6	1/19/2001	<1.0	<0.005	<0.005	<0.005	<0.005	<0.050
MW-5 4-6	1/19/2001	**8.4**	<0.005	**0.0052**	<0.005	**0.0062**	<0.050
WP-101@6'	6/12/2002	<1.0	<0.005	<0.005	<0.005	<0.005	<0.05
WP-102@6.5'	6/12/2002	<1.0	<0.005	<0.005	<0.005	<0.005	<0.05
WP-103@3'	6/12/2002	**5**	<0.005	<0.005	<0.005	<0.005	<0.05
WP-104@4'	6/12/2002	<1.0	<0.005	<0.005	<0.005	<0.005	<0.05
EP-1	6/3/2003	**1,000**	<0.005	<0.005	<0.005	<0.005	<0.05
EP-2	6/3/2003	**15,000**	<0.005	<0.005	<0.005	<0.005	<0.05
EP-3	6/3/2003	**5,900**	<0.005	<0.005	<0.005	<0.005	<0.05
EP-4	6/3/2003	**13,000**	<0.005	<0.005	<0.005	<0.005	<0.05
EP-5	6/3/2003	<1.0	<0.005	<0.005	<0.005	<0.005	<0.05
EP-6	6/3/2003	**25,000**	<0.005	<0.005	<0.005	<0.005	<0.05
EP-7	6/3/2003	**7,000**	<0.005	<0.005	<0.005	<0.005	<0.05
EP-8	6/3/2003	**8,700**	<0.005	<0.005	<0.005	<0.005	<0.05
SP-1/SP-2[6]	6/3/2003	**9,700**	<0.005	<0.005	<0.005	<0.005	<0.05
SP-3/SP-4[6]	6/3/2003	**25,000**	<0.005	<0.005	<0.005	<0.005	<0.05
SP-5/SP-6[6]	6/3/2003	**20,000**	<0.005	<0.005	<0.005	<0.005	<0.05
SP-7/SP-8[6]	6/3/2003	**5,600**	<0.005	<0.005	<0.005	<0.005	<0.05

1. ug/g: micrograms per gram
2. TPHD: Total Petroleum Hydrocarbons as Diesel
3. BTEX: Benzene, Toluene, Ethylbenzene, and total Xylenes
4. MTBE: Methyl Tertiary-Butyl Ether
5. <: Denotes a laboratory value that is "less than" the method detection limit.
6. Composite sample

Table A-2
Historical Groundwater Analytical Results
Simpson Samoa Former AST Site, Samoa, California
(in ug/L)[1]

Sample Location	Sample Date	TPHG[2]	TPHD[3]	B[4]	T[4]	E[4]	X[4]	MTBE[5]	ETH[6]	Fuel Oxygenates[7]
WP-1	6/19/00	NS[8]	**510**	<0.5[9]	<0.5	<0.5	<0.5	<3.0	NS	NS
WP-2	6/19/00	NS	**3,100**	<1.0	<1.0	<1.0	<1.0	<6.0	NS	NS
WP-3	6/19/00	NS	**11,000**	<2.5	<2.5	<2.5	<2.5	<15	NS	NS
WP-4	6/19/00	NS	**1,100**	<0.5	<0.5	<0.5	<0.5	<3.0	NS	NS
WP-5	6/19/00	NS	**480**	<0.5	<0.5	<0.5	<0.5	**3.3**	NS	NS
WP-6	6/19/00	NS	**2,000**	<1.0	<1.0	<1.0	<1.0	**11**	NS	NS
WP-7	6/19/00	NS	**360**	<0.5	<0.5	<0.5	<0.5	**7.7**	NS	NS
WP-9	6/19/00	NS	**76**	<0.5	<0.5	<0.5	<0.5	<3.0	NS	NS
WP-10	6/19/00	NS	**170**	<0.5	<0.5	<0.5	<0.5	<3.0	NS	NS
Tank	6/3/03	NS	**39,000**	<0.50	<0.50	<0.50	<0.50	NS	NS	NS
MW-1	1/25/01	<50	**270**	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	NS
	3/7/01	<50	**130**	<0.50	<0.50	<0.50	<0.50	<0.50	NS	ND[10]
	6/7/01	<50	**160**	<0.50	<0.50	<0.50	<0.50	<0.50	NS	ND
	9/6/01	<50	**73**	<0.50	<0.50	<0.50	<0.50	<0.50	<500	ND
	12/6/01	<50	**100**	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	ND except Methanol: 61
	3/6/02	<50	**110**	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	ND
	9/10/02	<50	**190**	<0.50	<0.50	<0.50	<0.50	<3.0	NS	NS
	3/4/03	<50	**95**	<0.50	<0.50	<0.50	<0.50	<3.0	NS	NS
	6/11/03	<50	**68**	<0.50	<0.50	<0.50	<0.50	<3.0	NS	NS
	9/8/03	<50	**120**	<0.50	<0.50	<0.50	<0.50	<3.0	NS	NS
	3/2/04	NS	<50	NS	NS	NS	NS	NS	NS	NS
	9/1/04	NS	**200**	NS	NS	NS	NS	NS	NS	NS
	3/4/05	NS	<50	NS	NS	NS	NS	NS	NS	NS
MW-2	1/26/01	**360**	**4,700**	<0.50	**0.61**	<0.50	**1**	<0.50	<5.0	NS
	3/7/01	**210**	**2,900**	<0.50	<0.50	<0.50	**1.8**	<0.50	NS	ND
	6/7/01	<250	**3,300**	<1.3	<1.3	<1.3	<1.3	<1.3	NS	ND
	9/6/01	**450**	**12,000**	<1.0	<1.0	<1.0	<1.0	<1.0	<1,000	ND
	12/6/01	NS	NS	NS	NS	NS	NS	NS	NS	NS
	3/6/02	NS	NS	NS	NS	NS	NS	NS	NS	NS
	9/10/02	**490**	**18,000**	<0.50	<0.50	<0.50	<0.50	<3.0	NS	NS
	3/4/03	**380**	**12,000**	<0.50	<0.50	<0.50	<0.50	<3.0	NS	NS
Well MW-2 Destroyed 6/2/03										

Table A-2
Historical Groundwater Analytical Results
Simpson Samoa Former AST Site, Samoa, California
(in ug/L)[1]

Sample Location	Sample Date	TPHG[2]	TPHD[3]	B[4]	T[4]	E[4]	X[4]	MTBE[5]	ETH[6]	Fuel Oxygenates[7]
MW-3	1/25/01	<50	**660**	<0.50	**1.4**	<0.50	<0.50	<0.50	**15**	NS
	3/7/01	<50	**210**	<0.50	<0.50	<0.50	<0.50	<0.50	NS	ND
	6/7/01	<250	**1,400**	<1.3	<1.3	<1.3	<1.3	**8.6**	NS	ND
	9/6/01	<200	**2,000**	<1.0	<1.0	<1.0	<1.0	**7.9**	<1,000	ND
	12/6/01	<200	**610**	<1.0	<1.0	<1.0	<1.0	**4.9**	<5.0	ND
	3/6/02	<200	**660**	<1.0	<1.0	<1.0	<1.0	**2.8**	<5.0	ND
	6/7/02	**93**	**2,300**	<0.50[6]	<0.50	<0.50	<0.50	**2.5**	NS	ND
	9/10/02	**160**	**2,800**	<0.50	<0.50	<0.50	<0.50	<3.0	NS	NS
	12/27/02	**86**	**1,600**	<0.50	<0.50	<0.50	<0.50	<3.0	NS	NS
	3/4/03	**84**	**1,300**	<0.50	<0.50	<0.50	<0.50	<3.0	NS	NS
	6/11/03	<50	**590**	<0.50	<0.50	<0.50	<0.50	<3.0	NS	NS
	9/8/03	**74**	**1,300**	<0.50	<0.50	<0.50	<0.50	<3.0	NS	NS
	3/2/04	NS	**540**	NS	NS	NS	NS	NS	NS	NS
	9/1/04	NS	**690**	NS	NS	NS	NS	NS	NS	NS
	3/4/05	NS	**660**	NS	NS	NS	NS	NS	NS	NS
MW-4	1/26/01	<50	**460**	<0.50	<0.50	<0.50	<0.50	**4.4**	<5.0	NS
	3/7/01	<50	**280**	<0.50	<0.50	<0.50	<0.50	**5**	NS	ND
	6/7/01	<100	**170**	<0.50	<0.50	<0.50	<0.50	**2.6**	NS	ND
	9/6/01	<50	**240**	<0.50	<0.50	<0.50	<0.50	**2.5**	<500	ND
	12/6/01	<200	**250**	<1.0	<1.0	<1.0	<1.0	**2.7**	<5.0	ND
	3/6/02	<200	**500**	<1.0	<1.0	<1.0	<1.0	**6.4**	<5.0	ND
	9/10/02	<50	**390**	<0.50	<0.50	<0.50	<0.50	<3.0	NS	NS
	3/4/03	<50	**310**	<0.50	<0.50	<0.50	<0.50	<3.0	NS	NS
	6/11/03	<50	**170**	<0.50	<0.50	<0.50	<0.50	<3.0	NS	NS
	9/8/03	<50	**210**	<0.50	<0.50	<0.50	<0.50	**3**	NS	NS
	3/2/04	NS	**120**	NS	NS	NS	NS	NS	NS	NS
	9/1/04	NS	**450**	NS	NS	NS	NS	NS	NS	NS
	3/4/05	NS	**210**	NS	NS	NS	NS	NS	NS	NS

Table A-2
Historical Groundwater Analytical Results
Simpson Samoa Former AST Site, Samoa, California
(in ug/L)[1]

Sample Location	Sample Date	TPHG[2]	TPHD[3]	B[4]	T[4]	E[4]	X[4]	MTBE[5]	ETH[6]	Fuel Oxygenates[7]
MW-5	1/26/01	<50	<50	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	NS
	3/7/01	<50	<50	<0.50	<0.50	<0.50	<0.50	<0.50	NS	ND
	6/7/01	<50	<50	<0.50	**0.96**	<0.50	<0.50	<0.50	NS	ND
	9/6/01	<50	<50	<0.50	**0.50**	<0.50	<0.50	<0.50	<500	ND
	12/6/01	<50	<50	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	ND
	3/6/02	<50	**66**	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	ND
	9/10/02	<50	<50	<0.50	<0.50	<0.50	<0.50	<3.0	NS	NS
	3/4/03	<50	150	<0.50	<0.50	<0.50	<0.50	<3.0	NS	NS
	6/11/03	<50	150	<0.50	<0.50	<0.50	<0.50	<3.0	NS	NS
	9/8/03	<50	<50	<0.50	<0.50	<0.50	<0.50	<3.0	NS	NS
	3/2/04	NS	**81**	NS	NS	NS	NS	NS	NS	NS
	9/1/04	NS	**51**	NS	NS	NS	NS	NS	NS	NS
	3/4/05	NS	<50	NS	NS	NS	NS	NS	NS	NS
WP-101	6/12/02	NS	**120**	<0.5[4]	<0.5	<0.5	<0.5	<3.0	NS	NS
WP-102	6/12/02	NS	**140**	<0.5	<0.5	<0.5	<0.5	<3.0	NS	NS
WP-103	6/12/02	NS	**110**	<0.5	<0.5	<0.5	<0.5	<3.0	NS	NS
WP-104	6/12/02	NS	**140**	<0.5	<0.5	<0.5	<0.5	<3.0	NS	NS
WP-201@ 3'-6'	9/1/04	NS	**24,000**	NS	NS	NS	NS	NS	NS	NS
WP-201@ 6'-9'	9/1/04	NS	**420**	NS	NS	NS	NS	NS	NS	NS

1. ug/L: micrograms per Liter
2. TPHG: Total Petroleum Hydrocarbons as Gasoline, analyzed in general accordance with U.S. Environmental Protection Agency (EPA) Method No. 8260B.
3. TPHD: Total Petroleum Hydrocarbons as Diesel, analyzed in general accordance with EPA Method No. 3510.
4. BTEX: Benzene, Toluene, Ethylbenzene, and Xylenes, analyzed in general accordance with EPA Method No. 8260B.
5. MTBE: Methyl Tertiary-Butyl Ether, analyzed in general accordance with EPA Method No. 8260B.
6. ETH: Ethanol, analyzed in accordance with EPA Method No. 8260B.
7. Fuel oxygenates: Diisopropyl Ether (DIPE), Ethyl Tertiary-Butyl Ether (ETBE), Tertiary-Amyl Methyl Ether (TAME), Tertiary-Butyl Alcohol (TBA), methanol, and ethanol, analyzed in general accordance with EPA Method No. 8260B.
8. NS: Not Sampled
9. <: Denotes a value that is "less than" the laboratory method detection limit.
10. ND: Not present at the laboratory detection limit.

Table A-3
Historical Groundwater Elevation Data, Quarterly Sampling
Simpson Samoa Former AST Site, Samoa, California

Sample Location	Sample Date	Top of Casing Elevation (feet MSL)[1]	Depth to Water[2] (feet)	Groundwater Elevation (feet MSL)
MW-1	2/9/01	14.74	6.94	7.8
	3/7/01		6.35	8.39
	4/6/01		6.79	7.95
	5/7/01		7.13	7.61
	6/7/01		7.41	7.33
	7/16/01		7.68	7.06
	8/6/01		7.84	6.9
	9/6/01		8	6.74
	10/5/01		8.11	6.63
	11/6/01		8.13	6.61
	12/6/01		6.44	8.3
	2/8/02		4.6	10.14
	3/6/02		4.52	10.22
	6/7/02		5.89	8.85
	9/10/02		7.21	7.53
	12/27/02		4.85	9.89
	3/4/03		4.01	10.73
	6/11/03		4.78	9.96
	9/8/03		6.27	8.47
	3/2/04		3.76	10.98
	9/1/04		7.07	7.67
	3/4/05		4.59	10.15
MW-2	2/9/01	12.64	5.02	7.62
	3/7/01		4.51	8.13
	4/6/01		4.91	7.73
	5/7/01		5.27	7.37
	6/7/01		5.54	7.1
	7/16/01		5.77	6.87
	8/6/01		5.97	6.67
	9/6/01		6.53	6.11
	10/5/01		(5.76)/NM[3]	NA[4]
	11/6/01		(5.60)/9.43	NA
	12/6/01		(4.62)/6.57	NA
	2/8/02		3.08	9.56
	3/6/02		NM	NA
	6/7/02		4.38	8.26
	9/10/02		5.51	7.13
	12/27/02		3.76	8.88
	3/4/03		2.22	10.42

Table A-3 Historical Groundwater Elevation Data, Quarterly Sampling Simpson Samoa Former AST Site, Samoa, California				
Sample Location	Sample Date	Top of Casing Elevation (feet MSL)[1]	Depth to Water[2] (feet)	Groundwater Elevation (feet MSL)
Well MW-2 Destroyed 6/2/03				
MW-3	2/9/01	12.54	4.57	7.97
	3/7/01		4	8.54
	4/6/01		4.59	7.95
	5/7/01		4.98	7.56
	6/7/01		5.28	7.26
	7/16/01		5.54	7
	8/6/01		5.74	6.8
	9/6/01		5.89	6.65
	10/5/01		5.99	6.55
	11/6/01		5.98	6.56
	12/6/01		3.95	8.59
	2/8/02		2.65	9.89
	3/6/02		2.65	9.89
	6/7/02		4.13	8.41
	9/10/02		5.28	7.26
	12/27/02		2.81	9.73
	3/4/03		2.13	10.41
	6/11/03		3.03	9.51
	9/8/03		4.33	8.21
	3/2/04		1.99	10.55
	9/1/04		5.09	7.45
	3/4/05		3.01	9.53
MW-4	2/9/01	12.24	4.68	7.56
	3/7/01		4.09	8.15
	4/6/01		4.43	7.81
	5/7/01		4.85	7.39
	6/7/01		5.19	7.05
	7/16/01		5.36	6.88
	8/6/01		5.55	6.69
	9/6/01		5.65	6.59
	10/5/01		5.74	6.5
	11/6/01		5.67	6.57
	12/6/01		3.78	8.46
	2/8/02		2.63	9.61
	3/6/02		2.77	9.47
	6/7/02		4.06	8.18
	9/10/02		5.11	7.13
	12/27/02		2.79	9.45
	3/4/03		2.08	10.16
	6/11/03		2.97	9.27
	9/8/03		4.09	8.15
	3/2/04		2.01	10.23
	9/1/04		4.91	7.33
	3/4/05		2.98	9.26

Table A-3
Historical Groundwater Elevation Data, Quarterly Sampling
Simpson Samoa Former AST Site, Samoa, California

Sample Location	Sample Date	Top of Casing Elevation (feet MSL)[1]	Depth to Water[2] (feet)	Groundwater Elevation (feet MSL)
MW-5	2/9/01	11.98	3.31	8.67
	3/7/01		3.38	8.6
	4/6/01		3.63	8.35
	5/7/01		4.19	7.79
	6/7/01		4.6	7.38
	7/16/01		4.83	7.15
	8/6/01		4.99	6.99
	9/6/01		5.17	6.81
	10/5/01		5.28	6.7
	11/6/01		5.05	6.93
	12/6/01		3.14	8.84
	2/8/02		3.03	8.95
	3/6/02		3.07	8.91
	6/7/02		3.64	8.34
	9/10/02		4.5	7.48
	12/27/02		2.35	9.63
	3/4/03		3.02	8.96
	6/11/03		3.3	8.68
	9/8/03		3.75	8.23
	3/2/04		3.04	8.94
	9/1/04		4.33	7.65
	3/4/05		3.07	8.91

1. MSL: Mean Sea Level
2. Below top of casing
3. NM: Not Measured
4. NA: Not Applicable

Table A-4 Historical DO, DCO_2, and ORP Measurement Results Simpson Samoa Former AST Site, Samoa, California				
Sample Location	**Sample Date**	**DO[1] (ppm)[2]**	**DCO_2[3] (ppm)**	**ORP[4] (mV)[5]**
MW-1	3/7/01	0.64	170	77
	6/7/01	0.37	150	108
	9/6/01	0.18	140	162
	12/6/01	0.42	130	47
	3/6/02	0.28	150	99
	9/10/02	0.27	120	179
	3/4/03	0.53	100	236
	6/11/03	0.42	130	249
	9/8/03	0.63	150	257
	3/2/04	0.63	70	287
	9/1/04	0.51	120	8
	3/4/05	0.74	150	72
MW-2	3/7/01	0.37	170	-6
	6/7/01	0.08	225	10
	9/6/01	0.11	200	84
	12/6/01	NM[6]	NM	NM
	3/6/02	NM	NM	NM
	9/10/02	NM	147	250
	3/4/03	1.13	180	218
Well MW-2 Destroyed 6/2/03				
MW-3	3/7/01	0.72	150	-7
	6/7/01	0.45	230	2
	9/6/01	0.18	200	67
	12/6/01	0.42	120	11
	3/6/02	0.48	150	83
	6/7/02	0.69	200	80
	9/10/02	0.78	160	145
	12/27/02	0.91	170	233
	3/4/03	0.55	170	246
	6/11/03	0.43	140	229
	9/8/03	0.39	130	236
	3/2/04	0.75	100	274
	9/1/04	1.11	120	-112
	3/4/05	0.9	100	0

Table A-4
Historical DO, DCO_2, and ORP Measurement Results
Simpson Samoa Former AST Site, Samoa, California

Sample Location	Sample Date	DO[1] (ppm)[2]	DCO_2 [3] (ppm)	ORP[4] (mV)[5]
MW-4	3/7/01	0.41	120	2
	6/7/01	0.12	160	13
	9/6/01	0.1	120	62
	12/6/01	0.32	120	66
	3/6/02	0.24	170	95
	9/10/02	0.22	80	137
	3/4/03	0.45	150	217
	6/11/03	0.31	90	231
	9/8/03	0.7	120	222
	3/2/04	0.66	150	281
	9/1/04	1.04	70	-62
	3/4/05	1.12	90	-30
MW-5	3/7/01	0.45	60	-23
	6/7/01	0.07	100	-45
	9/6/01	0.13	60	36
	12/6/01	0.32	80	10
	3/6/02	0.32	100	75
	9/10/02	0.23	60	140
	3/4/03	0.63	90	228
	6/11/03	0.32	80	241
	9/8/03	0.3	80	224
	9/1/04	0.48	40	-77
	3/4/05	0.77	80	57

1. DO: Dissolved Oxygen, field measured using portable instrumentation.
2. ppm: Measurement concentration, in parts per million.
3. DCO_2: Dissolved Carbon Dioxide, field measured using a field test kit.
4. ORP: Oxidation-Reduction Potential measured using portable instrumentation.
5. mV: millivolts
6. NM: Not measured

Table A-5
Historical Monitoring Well MW-2 Free Product Recovery Data
Simpson Samoa Former AST Site, Samoa, California

Date	Depth to Free Product (feet)	Depth to Water (feet)	Free Product Thickness (feet)	Free Product Recovered (gallons)	Groundwater Recovered (gallons)	Total Fluid Recoverd (gallons)
11/6/01	5.6	9.43	3.83	0	0	0.00
11/29/01	4.55	9.45	4.90[1]	1	4.5	5.50
12/6/01	4.62	6.57	1.95	0.25	2.75	3.00
1/10/02	2.92	3.04	0.11	NR[2]	NR	NR
1/16/02	3.53	3.56	0.03	INS[3]	2	2.00
1/18/02	3.53	3.55	0.02	INS	2	2.00
1/21/02	3.43	3.44	0.01	INS	2	2.00
1/23/02	NA[4]	3.17	0	0	1	1.00
1/25/02	NA	3.29	0	0	1	1.00
2/8/02	NA	3.08	0	0	0	0.00
3/6/02	3.12	3.13	0.01	INS	2	2.00
4/17/02	NA	3.37	0	0	0.25	0.25
5/17/02	4.11	4.12	0.01	INS	2	2.00
6/7/02	4.38	4.38	<0.01[5]	INS	2	2.00
9/10/02	5.51	5.51	0	INS	1	4.80
12/27/02	3.75	3.76	0.01	INS	4	4.00
3/4/03	2.22	2.22	0	0	6.25	6.25
Well MW-2 Destroyed on 6/2/03						

1. Product thickness recovered to 1.79 feet after 24 hours.
2. NR: Not recorded
3. NS: Insufficient product for measurement
4. NA: Not applicable, no product present
5. < denotes a value that is "less than" the laboratory method detection limit.

Appendix B

Field Notes

CONSULTING ENGINEERS & GEOLOGISTS, INC.
480 Hemsted Drive • Redding, CA 96002• Tel: 530.221.5424 • FAX: 530.221.0135 •E-mail: shninfo@shn-redding.com
812 W. Wabash • Eureka, CA 95501 • Tel: 707.441.8855 • FAX: 707.441.8877 •E-mail: shninfo@shn-engr.com

DAILY FIELD REPORT

JOB NO 000060
Page 1 of 8

PROJECT NAME: Simpson Samoa AST	CLIENT/OWNER: Simpson Samoa Corporation	DAILY FIELD REPORT SEQUENCE NO: 1	
GENERAL LOCATION OF WORK: Samoa, CA	OWNER/CLIENT REPRESENTATIVE: Rob Ricci	DATE: 3-4-05	DAY OF WEEK: Friday
TYPE OF WORK: Semi-annual sampling	WEATHER: Overcast with showers	PROJECT ENGINEER/ SUPERVISOR: Frans Lowman	
SOURCE & DESCRIPTION OF FILL MATERIAL	KEY PERSONS CONTACTED	TECHNICIAN: David R. Pairn	

DESCRIBE EQUIPMENT USED FOR HAULING, SPREADING, WATERING, CONDITIONING, & COMPACTING

0803	Arrived at site, Removed lids and caps on all 4 wells.
0819	I started taking water levels decoming the sounder after each well by scrubbing it with liquinox then rinsing it with D I water.
0836	I started taking D O Readings.
0908	I started purging mw-5 with a disposable bailer, purge water was caught in 5 gal. buckets.
0935	I sampled mw-5, secured well with cap and lid.
0939	I started purging mw-1 with a disposable bailer, purge water was caught in a graduated 4 gal. bucket.
1005	I sampled mw-1, secured well with cap and lid.
1008	I started purging mw-3 with a disposable bailer, purge water was caught in 5 gal. buckets.
1035	I sampled mw-3 secured well with cap and lid.
1037	I started purging mw-4 with a disposable bailer, purge water was caught in 5 gal. buckets.
1105	I sampled mw-4, secured well with cap and lid.
1111	OFF SITE
Note:	All decon water and purge water was caught in 5 gal. buckets with lids then transported to SHN's 1,000 gal. PWST located at 812 W. Wabash Avenue Eureka, CA 26 gallons total.

COPY GIVEN TO:

REPORTED BY: David R. Pairn

CONSULTING ENGINEERS & GEOLOGISTS, INC.
812 W. Wabash • Eureka, CA 95501-2138 • 707/441-8855 • FAX: 707/441-8877 •shninfo@shn-engr.com

Groundwater Elevations

Job No.: 000060 Name: David R. Paine

Client: SIMPSON SAMOA CORPORATION Date: 3-4-05

Location: SAMOA,CA Weather: Overcast

Sample Location	Time of Reading	Top of Casing Elevation (feet)	Depth To Water (feet)	Water Surface Elevation (feet)
MW-1	0824	14.74	4.59	10.15
MW-3	0826	12.54	3.01	9.53
MW-4	0829	12.24	2.98	9.26
MW-5	0819	11.98	3.07	8.91

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Water Sampling Data Sheet

Project Name:	Simpson Samoa	Date/Time:	3-4-05
Project No.:	000060	Sampler Name:	David P. Pamm
Location:	Samoa, CA	Sample Type:	Ground water
Well #:	MW-5	Weather	Overcast
Hydrocarbon Thickness/Depth (feet):	NA	Key Needed:	YES Dolphin

Total Well Depth (feet)	-	Initial Depth to Water (feet)	=	Height of Water Column (feet)	x	0.163 gal/ft (2-inch well) / 0.653 gal/ft (4-inch well)	=	1 Casing Volume (gal)
15.20	-	3.07	=	12.13	x	0.163	=	1.98

Time	DO (ppm)	CO_2 (ppm)	ORP (mV)	EC (uS/cm)	Temp (°F)	pH	Water Removed (gal)	Comments
0841	0.77						0 gal	
0908	↓	80	57				0.25 gal	
0916	↓			590	54.7°	6.93	2 gal	
0921	No Flow			583	54.9°	7.02	4 gal	
0927	then cell			546	54.7°	7.01	6 gal.	
0935	Sample Time							

Purge Method: Hand Bail

Total Volume Removed: 6.00 (gal)

Laboratory Information

Sample ID	# & Type of Containers	Preservative / Type	Laboratory	Analyses
MW-5	2-60ml VOAs	None	NCL	TPHD

Well Condition: Good

Remarks:

Recharged to 3.06 at sample Time

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EQUIPMENT CALIBRATION SHEET

Name: David R. Paine

Project Name: Simpson Samoa AST

Reference No.: 000060

Date: 3-4-05

Equipment: ☒ pH & EC ☐ PID ☐ $GTCO_2$ ☐ GTLEL
☐ Turbidity ☒ Other Dissolved Oxygen Meter YSI95

Description of Calibration Procedure and Results:

pH & Ec meter is calibrated using a 2 buffer method with 7.01 and 4.01, the Ec (conductivity) is set at 1413 µS.

DO meter is self calibrating with the Altimeter set at 0.

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Water Sampling Data Sheet

Project Name:	Simpson Samoa	Date/Time:	3-4-05
Project No.:	000060	Sampler Name:	David P. Paine
Location:	Samoa, CA	Sample Type:	Ground water
Well #:	MW-1	Weather	Overcast
Hydrocarbon Thickness/Depth (feet):	NA	Key Needed:	YES Dolphin

Total Well Depth (feet)	-	Initial Depth to Water (feet)	=	Height of Water Column (feet)	x	0.163 gal/ft (2-inch well) / 0.653 gal/ft (4-inch well)	=	1 Casing Volume (gal)
15.00	-	4.59	=	10.41	x	0.163	=	1.70

Time	DO (ppm)	CO_2 (ppm)	ORP (mV)	EC (uS/cm)	Temp (°F)	pH	Water Removed (gal)	Comments
0848	0.74						0 gal	
0939	↓	150	72				0.25 gal	
0946	↓			180	55.2°	5.95	1.25 gal	
0951	No Flow			185	55.7°	5.97	3.50 gal	
0956	thru cell			190	55.7°	6.01	5.25 gal	
1005	Sample Time							

Purge Method: Hand Bail

Total Volume Removed: _____ (gal)

Laboratory Information

Sample ID	# & Type of Containers	Preservative / Type	Laboratory	Analyses
MW-1	2-60ml VOAs	None	NCL	TPHD

Well Condition: Good

Remarks:

Recharged to 4.83 at sample Time

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Water Sampling Data Sheet

Project Name: Simpson Samoa
Project No.: 000060
Location: Samoa, CA
Well #: MW-3
Hydrocarbon Thickness/Depth (feet): NA
Date/Time: 3-4-05
Sampler Name: David P. Pamy
Sample Type: Ground water
Weather: Overcast
Key Needed: YES Delphia

Total Well Depth (feet)	-	Initial Depth to Water (feet)	=	Height of Water Column (feet)	x	0.163 gal/ft (2-inch well) / 0.653 gal/ft (4-inch well)	=	1 Casing Volume (gal)
14.60	-	3.01	=	11.59	x	0.163	=	1.89

Time	DO (ppm)	CO_2 (ppm)	ORP (mV)	EC (uS/cm)	Temp (°F)	pH	Water Removed (gal)	Comments
0854	0.90						0 gal	
1008	↓	100	-000				0.25 gal	
1015	↓			635	54.6°	6.64	2 gal	
1020	No Flow			643	54.7°	6.70	4 gal	
1024	then cell			636	54.5°	6.69	6 gal	
1035	Sample Time							

Purge Method: Hand Bail
Total Volume Removed: 6.00 (gal)

Laboratory Information

Sample ID	# & Type of Containers	Preservative / Type	Laboratory	Analyses
MW-3	2-60ml VOAs	None	NCL	TPHD

Well Condition: Good
Remarks:
Recharged to 3.08 at sample Time

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Water Sampling Data Sheet

Project Name:	Simpson Samoa	Date/Time:	3-4-05
Project No.:	000060	Sampler Name:	David P. Palma
Location:	Samoa, CA	Sample Type:	Ground water
Well #:	MW-4	Weather	Overcast
Hydrocarbon Thickness/Depth (feet):	NA	Key Needed:	YES Dolphin

Total Well Depth (feet)	-	Initial Depth to Water (feet)	=	Height of Water Column (feet)	x	0.163 gal/ft (2-inch well) / 0.653 gal/ft (4-inch well)	=	1 Casing Volume (gal)
15.25	-	2.98	=	12.27	x	0.163	=	2.00

Time	DO (ppm)	CO_2 (ppm)	ORP (mV)	EC (uS/cm)	Temp (°F)	pH	Water Removed (gal)	Comments
0900	1.12						0 gal	
1037	↓	90	-30				0.25 gal	
1045	↓			803	55.4°	6.25	2 gal	
1049	No Flow			825	55.5°	6.76	4 gal	
1054	thru cell			815	55.6°	6.79	6 gal	
1105	Sample Time							

Purge Method: Hand Bail

Total Volume Removed: 6.00 (gal)

Laboratory Information

Sample ID	# & Type of Containers	Preservative / Type	Laboratory	Analyses
MW-4	2-60ml VOA's	None	NCL	TPHD

Well Condition: Good

Remarks:

Recharged to 3.16 at sample Time

Client Name: **SIMPSON SAMOA AST**

The water from your site: **1 JIM SMITH DRIVE SAMOA, CA**
RWQCB CASE # 1NHU764

SHN ref # **000060** Collected On: **9/1/04**

Has been tested and certified as acceptable to be discharged into the City of Eureka municipal sewer system.

Amount Discharged: **26 GALLONS**

Date Discharged: **9/17/04**

Certified by: **DAVID R. PAINE**

SHN CONSULTING ENGINEERS & GEOLOGISTS, INC.
City of Eureka Wastewater Discharge Permit #65

Appendix C

Laboratory Analytical Report

NORTH COAST LABORATORIES LTD.

March 16, 2005

Simpson Timber Company
P.O. Box 1089
Arcata, CA 95518

Attn: Rob Ricci

RE: 000060, Simpson Samoa AST

Order No.: 0503130
Invoice No.: 48801
PO No.: 1079-04-AD-0
ELAP No. 1247-Expires July 2006

SAMPLE IDENTIFICATION

Fraction	Client Sample Description
01A	MW-5
02A	MW-1
03A	MW-3
04A	MW-4

ND = Not Detected at the Reporting Limit

Limit = Reporting Limit

All solid results are expressed on a wet-weight basis unless otherwise noted.

REPORT CERTIFIED BY

Laboratory Supervisor(s) | QA Unit | Jesse G. Chaney, Jr.
Laboratory Director

5680 West End Road • Arcata California 95521-9202 • 707-822-4649 • FAX 707-822-6831

North Coast Laboratories, Ltd. Date: *16-Mar-05*

CLIENT: Simpson Timber Company
Project: 000060, Simpson Samoa AST
Lab Order: 0503130

CASE NARRATIVE

TPH as Diesel:
Samples MW-3 and MW-4 contain material similar to degraded or weathered diesel oil.

The surrogate recoveries were above the upper acceptance limit for all of the samples, the method blank and the laboratory control sample/laboratory control sample duplicate (LCS/LCSD). The LCS/LCSD recoveries for diesel were within the acceptance limits; therefore, the data were accepted.

NORTH COAST LABORATORIES
5680 West End Road • Arcata, California 95521-9202 • 707-822-4649 • FAX 707-822-6831

Date: 16-Mar-05
WorkOrder: 0503130

ANALYTICAL REPORT

Client Sample ID: MW-5 **Received:** 3/4/05 **Collected:** 3/4/05 9:35
Lab ID: 0503130-01A

Test Name: TPH as Diesel **Reference:** EPA 3510/GCFID(LUFT)/EPA 8015B

Parameter	Result	Limit	Units	DF	Extracted	Analyzed
TPHC Diesel (C12-C22)	ND	50	µg/L	1.0	3/10/05	3/11/05
Surrogate: N-Tricosane	115	27.6-107	% Rec	1.0	3/10/05	3/11/05

Client Sample ID: MW-1 **Received:** 3/4/05 **Collected:** 3/4/05 10:05
Lab ID: 0503130-02A

Test Name: TPH as Diesel **Reference:** EPA 3510/GCFID(LUFT)/EPA 8015B

Parameter	Result	Limit	Units	DF	Extracted	Analyzed
TPHC Diesel (C12-C22)	ND	50	µg/L	1.0	3/10/05	3/11/05
Surrogate: N-Tricosane	113	27.6-107	% Rec	1.0	3/10/05	3/11/05

Client Sample ID: MW-3 **Received:** 3/4/05 **Collected:** 3/4/05 10:35
Lab ID: 0503130-03A

Test Name: TPH as Diesel **Reference:** EPA 3510/GCFID(LUFT)/EPA 8015B

Parameter	Result	Limit	Units	DF	Extracted	Analyzed
TPHC Diesel (C12-C22)	660	50	µg/L	1.0	3/10/05	3/11/05
Surrogate: N-Tricosane	115	27.6-107	% Rec	1.0	3/10/05	3/11/05

Client Sample ID: MW-4 **Received:** 3/4/05 **Collected:** 3/4/05 11:05
Lab ID: 0503130-04A

Test Name: TPH as Diesel **Reference:** EPA 3510/GCFID(LUFT)/EPA 8015B

Parameter	Result	Limit	Units	DF	Extracted	Analyzed
TPHC Diesel (C12-C22)	210	50	µg/L	1.0	3/10/05	3/11/05
Surrogate: N-Tricosane	113	27.6-107	% Rec	1.0	3/10/05	3/11/05

NORTH COAST LABORATORIES
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North Coast Laboratories, Ltd.

Date: 16-Mar-05

CLIENT: Simpson Timber Company
Work Order: 0503130
Project: 000060, Simpson Samoa AST

QC SUMMARY REPORT
Method Blank

Sample ID: **MB-13136** Batch ID: **13136** Test Code: **TPHDIW** Units: **µg/L** Analysis Date: **3/11/05 1:08:05 PM** Prep Date: **3/10/05**

Client ID: Run ID: **ORGC7_050311A** SeqNo: **490133**

Analyte	Result	Limit	SPK value	SPK Ref Val	% Rec	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
TPHC Diesel (C12-C22)	ND	50									
N-Tricosane	60.7	0.10	50.0	0	121%	28	107	0			S

Qualifiers:

ND - Not Detected at the Reporting Limit

J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits

R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

North Coast Laboratories, Ltd.

Date: 16-Mar-05

CLIENT: Simpson Timber Company
Work Order: 0503130
Project: 000060, Simpson Samoa AST

QC SUMMARY REPORT
Laboratory Control Spike

Sample ID: **LCS-13136** Batch ID: **13136** Test Code: **TPHDIW** Units: **µg/L** Analysis Date: **3/11/05 10:51:00 AM** Prep Date: **3/10/05**
Client ID: Run ID: **ORGC7_050311A** SeqNo: **490130**

Analyte	Result	Limit	SPK value	SPK Ref Val	% Rec	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
TPHC Diesel (C12-C22)	453.1	50	500	0	90.6%	80	120	0			
N-Tricosane	58.0	0.10	50.0	0	116%	28	107	0			S

Sample ID: **LCSD-13136** Batch ID: **13136** Test Code: **TPHDIW** Units: **µg/L** Analysis Date: **3/11/05 11:54:19 AM** Prep Date: **3/10/05**
Client ID: Run ID: **ORGC7_050311A** SeqNo: **490131**

Analyte	Result	Limit	SPK value	SPK Ref Val	% Rec	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
TPHC Diesel (C12-C22)	478.7	50	500	0	95.7%	80	120	453	5.50%	15	
N-Tricosane	61.2	0.10	50.0	0	122%	28	107	58.0	5.41%	15	S

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
B - Analyte detected in the associated Method Blank

NORTH COAST LABORATORIES LTD.
5680 West End Road • Arcata • CA 95521-9202
707-822-4649 Fax 707-822-6831

Chain of Custody

LABORATORY NUMBER: 0503130

Attention: Rob Ricci
Results & Invoice to: Simpson Timber Company
Address: P.O. Box 1089
Arcata, CA 95518
Phone: 268-3000
Copies of Report to: SHN Fran's Lowman
812 W. Wabash Ave. Eureka, CA 95501-2138
Sampler (Sign & Print): David R. Paine David R. Paine

PROJECT INFORMATION
Project Number: 000060
Project Name: Simpson Samoa AST
Purchase Order Number:

TAT: ☐ 24 Hr ☐ 48 Hr ☐ 5 Day ☐ 5–7 Day
☒ STD (2–3 Wk) ☐ Other:
PRIOR AUTHORIZATION IS REQUIRED FOR RUSHES

REPORTING REQUIREMENTS: State Forms ☐
Preliminary: FAX ☐ Verbal ☐ By:__/__/__
Final Report: FAX ☐ Verbal ☐ By:__/__/__

CONTAINER CODES: 1—½ gal. pl; 2—250 ml pl; 3—500 ml pl; 4—1 L Nalgene; 5—250 ml BG; 6—500 ml BG; 7—1 L BG; 8—1 L cg; 9—40 ml VOA; 10—125 ml VOA; 11—4 oz glass jar; 12—8 oz glass jar; 13—brass tube; 14—other

PRESERVATIVE CODES: a—HNO_3; b—HCl; c—H_2SO_4; d—$Na_2S_2O_3$; e—NaOH; f—$C_2H_3O_2Cl$; g—other

LAB ID	SAMPLE ID	DATE	TIME	MATRIX*	PRESERVATIVE	CONTAINER	ANALYSIS: TPHD
	MW-5	3/4/05	0935	GW			X
	MW-1	"	1005	"			X
	MW-3	"	1035	"			X
	MW-4	↓	1105	↓			X

SAMPLE CONDITION/SPECIAL INSTRUCTIONS

Cooler Temp = 6.0 C

RELINQUISHED BY (Sign & Print)	DATE/TIME	RECEIVED BY (Sign)	DATE/TIME
David R. Paine David R. Paine	3/4/05 1200	K. Thompson	3/4/05 1200

SAMPLE DISPOSAL
☒ NCL Disposal of Non-Contaminated
☐ Return ☐ Pickup

CHAIN OF CUSTODY SEALS Y/N/NA
SHIPPED VIA: UPS Air-Ex Fed-Ex Bus (Hand)

***MATRIX:** DW=Drinking Water; Eff=Effluent; Inf=Influent; SW=Surface Water; GW=Ground Water; S=Soil; O=Other.

ALL CONTAMINATED NON-AQUEOUS SAMPLES WILL BE RETURNED TO CLIENT